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ABSTRACT

An instructional videoconference (IVC) is an interactive delivery mechanism for long-distance communication and education, which uses 2-way audio and 1- or 2-way video to facilitate interaction between presenters and learners who are separated by significant distance. This guide, intended for the staff of federal, state, and local programs that serve mothers and children, illustrates the basics of instructional videoconference production. A definition of IVC is provided, including linkage, interactivity, and crucial factors to consider when deciding whether or not to choose an IVC. Discussion then focuses on: instructional design goals; demographics and audience description; four types of delivery systems (satellite, cable, microwave, and digital telecommunications via phone lines or fiber optic systems); and costs. The steps involved in producing an IVC are also described and include: identifying a need; establishing a goal; determining a timetable; and developing a team which incorporates a content specialist, producer, instructional designer, audience specialist, and delivery system specialist. An example is provided of how an IVC may be achieved by marrying different delivery systems and technologies. (AEF)

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tions, photographs, and video. Presenting processes and procedures so that they may be visually observed and modeled by learners is an effective instructional approach. You may want to use case studies portrayed through video to reveal salient aspects of a process or a procedure.

Eye contact and body language of the presenter may affect the efficacy of instruction. By carefully choosing angles and shots, a television studio director can enhance the instructor's presentation. Interaction among expert panelists also enhances the learners' interest in the exchange.³

Often presenters have previously prepared visual information in the form of overheads, slides, and charts. This visual information may be crucial to what your expert has to say. By preplanning and getting help from the television graphics person or the director associated with your production facility, you can ensure that all graphics and visuals look good for your videoconference.

DEMOGRAPHICS AND AUDIENCE DESCRIPTION

Once you have identified the content of your training you should consider these key questions about your potential learner/participants:

Who are the learners?

Who are the professionals and families who need to be reached with this information and training? Will your audience be multidisciplinary? Do you have good liaisons with the professional and/or lay groups that will be represented?

How many individuals do you plan to reach?

The emphasis of this guide is on large-scale IVC's that will involve hundreds of participants. In general, the more individuals you plan to reach, the more cost-effective the IVC. There are, however, small and large scale video conferences that use phone lines to aurally and visually link participants.

Where are your participants located?

Are they spread across a state, a region, or the country? The location of your participants coupled with the availability of downlink sites where they can receive the IVC will greatly influence your delivery system.

3 For detailed discussion of graphics for television see *Television Production Handbook* by Herbert Zettle (see full citation in references).

What are your participants' learning preferences?

In general, adult learners prefer self-directed learning. Some adults feel uncomfortable in a structured group learning session. Others, however, appreciate the structure. You may already have information about the learning styles of professionals you are targeting. This type of information may help you determine whether the IVC will be an effective format for your learners and how to adapt the IVC format for them. This information may also help you to decide what type of presentations to include in the IVC. For example, showing a video of a process in a real setting with close-ups and proper sequencing, creates very effective demonstrations and teaches technical skills. Similarly, videotaped case studies that familiarize the learner with details of specific family health care situations are a powerful learning tool.

Is there an individual at each site who can serve as a site coordinator?

Your participants will get the most out of the videoconference if someone at each site can facilitate the training for the other participants. Choosing the best site facilitator is crucial. She or he will be a leader among those whom you target for your IVC. This individual should be enthusiastic about the training. She or he must truly believe that the training will be beneficial to the participants. In addition, the site facilitator should be well-organized and responsible.

The site facilitator should be familiar with the issues and concerns of the participants and receive advance training about the videoconference's format and content, and about facilitating responsibilities. Also, the site coordinator will arrange for the downlink site and will take responsibility for coordinating the logistics of the site. She or he will coordinate with a technical person at the downlink site to make sure the signal is properly received.

DELIVERY SYSTEMS

There are four types of transmission options for sending your IVC to far-reaching sites: satellite, cable, microwave, and compressed digital over telephone lines or fiber optics systems. Currently, satellite transmission is the most accessible option, however the others are mentioned because in some regions these methods of transmission may be preferable.

SATELLITE:

With this technology your presentation is transmitted from your central site to a receiver on a satellite. The signal is then downlinked or transmitted to a ground receiver as a signal that can be received by any satellite dish that is tuned to receive the signal's transmission frequency. This technology allows for transmission over the entire U.S. and even internationally. The area that can potentially receive the downlink signal is referred to as the "footprint." The geographic limitations of this area depend on the location of the satellite you are using.

One person must be designated as the leader. Often this individual is the producer. However, if the producer is not an in-house person, another individual may take the lead. In addition to these on-going roles, an experienced moderator will be needed for the actual videoconference and as well as site facilitators to supervise each downlink site on the day of the broadcast. The following descriptions of these roles should help you to identify the individuals you will need to recruit.

Content Specialist:

This individual is very knowledgeable about the information, training, and instruction to be imparted. She or he will work with the instructional designer to determine what information must be included and how to prioritize and present that information.

Producer:

The producer is responsible for the ultimate product, the IVC. This individual works with the entire team to bring the instructional content into the IVC format. The producer will help select and bring the experts to the television studio or other location from which the televised presentation originates. She or he will audition a moderator, be responsible for coordinating and, if necessary, producing all visual components, and coordinating with the delivery system specialists to bring the IVC to the participant. The producer will also write a script outline or obtain the services of a script writer, director, and other television crew specialists. The producer may also be responsible for all aspects of the budget unless your organization includes a financial specialist who assumes the budgetary duties.

Instructional Designer:

This individual should make a major contribution to the initial decision to produce an IVC. He or she will help determine whether or not an IVC is an appropriate format for the content to be presented. The instructional designer has expertise in structuring the content for the training and instruction to maximize learning potential. This person will be familiar with the characteristics of the IVC format and will know how to shape the material to best take advantage of the IVC format's strengths.

Audience Specialist:

This individual will be familiar with the targeted participants and will have or develop the contacts to tap into professional networks that include these participants. Ideally, the audience specialist will already know the potential participants, how to reach them and how to cultivate their optimal participation. The audience specialist will identify individuals who can take responsibility for facilitating the IVC at downlink sites. The audience

GLOSSARY

ANALOG—Information presented by a continuous electromagnetic wave from a sound or light source. An analog signal is a continuous wave as opposed to a digital signal which conveys audio and light information in a series of discrete intervals or steps.

BAND WIDTH—The range of cycles per second (from low to high) of electromagnetic waves (known as frequencies) of a transmission channel.

C-BAND / KU-BAND—Domestic communications satellites operate on two frequency ranges, C- and Ku-band. Each requires specific electronic equipment. C-band is less expensive. Some IVC's are broadcast on both bands.

CODEC—A Codec-DeCoder converts analog signals (voice or video), into digital form.

COMPRESSED DIGITAL—The application of any of several techniques that reduce the amount of digital information required to represent that information in data transmission. Compression reduces the amount of band width necessary to transmit the information.

DIGITAL—Information represented by signals encoded numerically as a series of discrete steps or intervals. Can be converted to be sent over wire or air.

DOWNLINK—Retransmitting a signal that has been received by a satellite from a single earth station from the satellite over a wide geographic area to receiving earth stations.

DOWNLINK SITE—An earth station with a receiver dish tuned to pick up a signal being sent from a satellite.

E-MAIL— A system of electronic communication whereby an individual sends a message to another individual or group of people—usually refers to computer mail.

FREQUENCY—The number of times a complete electromagnet wave cycle occurs in a fixed unit of time (e.g., one second).

FIBER OPTICS—Communications medium based on a laser transmission that uses glass or plastic fiber which carry video or audio signals that have been converted into light pulses.

FOOTPRINT—Earth coverage area that a satellite can broadcast to.

GIGAHERTZ (GHz)—An electromagnetic wave that cycles at 1 billion cycles per second.

GROUND RECEIVER—Converts satellite signal into channel viewed on a TV monitor, located on earth.

HERTZ (Hz)—Basic measure of frequency with which an electromagnetic wave completes a full cycle from its positive to its negative pole and back again. A single hertz is equal to one cycle per second.

INSTRUCTIONAL VIDEO CONFERENCE—an interactive delivery mechanism for long-distance communication and education, linking presenters and learners separated by significant distances, using a 2-way audio and 1- or 2-way video to facilitate interacting between presenters and learners.

MEGAHERTZ (MHz)—One million electromagnetic cycles per second.

MICROWAVE—Line of sight transmission of high frequency signals using microwave transmitter and receiver dishes.

RECEIVER—Converts satellite signals into channels.

REPEATER—A device for strengthening a weak signal before sending it on to a more distant service area.

SATELLITE—An electronics retransmission device. Normally placed in geostationary orbit around the earth for the purpose of receiving and retransmitting electromagnetic signals.

REFERENCES

Lane, Carla (1993). *Technology Resource Guide: Introduction to Distance Learning for Adults*. San Ramon, CA: Lane & Johnson.

Ellis, Michael E. (1993, May). *Developing a road map for instructional videoconferencing: Where is it, and where should it go from here?* Paper presented at the meeting of the International Communications Association, Washington, D.C.

Portway, Patrick S., & Lane, Carla (1992). *Teleconferencing and Distance Learning*. San Ramon, CA: Applied Business Telecommunications.

Widner, Doug (1986). *A Handbook on Video-Teleconferencing*. Washington, D.C. Public Service Satellite Consortium.

Zettl, H. (1992). *Television Production Handbook*. 5th ed. Belmont, CA, Wadsworth, Inc.